

SSCI 101 – Workshop in Spatial Analysis

Course: SSCI 101 – Workshop in Spatial Analysis

Section: 35688R (Lecture)

Lecture: Monday 4-6:20pm

Location: AHF (Allan Hancock Foundation) B57A

Website: www.blackboard.usc.edu

Instructor: Dr. Darren Ruddell

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Skype: darren.ruddell

Twitter: @SSI_Prof

Office Hours: Tuesday and Thursday 11:30am-12:30pm and by appointment. I am happy to meet in person or asynchronously via email. I am also available via Skype or Adobe Connect most days provided we schedule the meeting in advance. Please take advantage of office hours – it is a great resource.

1. Introduction

The convergence of various global trends, including the sustained growth of the Earth's human population, increasing urbanization and globalization, the widening gap between rich and poor, and the likely impacts of climate change, among others, make location more important than ever. Different places or locations afford us different opportunities and challenges and many locations are increasingly as much a reflection of human creativity and imagination as they are natural places. People have an unprecedented opportunity to transform places into something different than they are now and many of these interventions will have important consequences for human health and well-being.

"SSCI 101 – Workshop in Spatial Analysis" provides an analytical overview of the various ways in which mobile apps can be used to help improve our understanding of the meaning and significance of place. There are many reasons why this knowledge may be helpful and individual workshops will be tailored to explore the role of location and place in one or more different applications, including business, design, diplomacy, environmental science, health, journalism, planning and public policy, and the humanities.

Students need no prior experience with mobile application development, as this course is meant to be introductory. Throughout the course, students will use the latest spatial analysis tools and accompanying geospatial data on mobile devices to collect, design, and deliver valuable information and assessments to address some problem and/or achieve some future goal.

The geographic information and technology for location-based services leverage web, wireless and geospatial technologies, and drive popular applications such as in-car navigation, mapping of nearby points of interest on cell phones, automatic notification of weather hazards as they impact travel along a highway route, location-based advertising, geosocial networking, and the tracking of inventory along supply chains. Most of these applications leverage the user's or the object's physical location to locate and access additional relevant information, and although the geospatial technology is perhaps the least understood of the three components, the geospatial content and services comprise most of the value.

"SSCI 101 – Workshop in Spatial Analysis" will explore the various ways in which geospatial content and services can be captured and used to advance our understanding of the places we traverse in our everyday lives.

2. Course Organization

This is a 10-week two-credit course comprised of lecture meetings once per week. The lecture sessions will discuss various aspects of spatial analysis, which include: spatial reasoning, cartography, data analysis and process, as well as hardware and software systems to investigate these processes. In general, lecture meetings will be divided into two parts: 1) an in-depth discussion of weekly topics; and 2) in-class time to work on course Projects.

Please note that all course materials and correspondence will be posted on the course Blackboard website. As a registered student you will find this course available for you to access at 10am Pacific Time on the first day of classes.

3. Grading Scheme

Social Media Interactions	10%
Project #1: Geospatial Application	15%
Project #2: ArcGIS.com Investigation	15%
Project #3: Story Map	20%
Project #4: GIS Day	15%
Homework Assignments and Discussion	10%
Final Reflection: The Value of Spatial Literacy	15%

4. Social Media – Twitter

The social media site Twitter has been gaining tremendous currency in the academic world as an instrument for sharing information, commenting on issues related to higher education, as well as addressing challenges in a given field, such as geospatial technologies. As such, it has

achieved acclaim for its use as a pedagogical tool to extend the work of the classroom. We are going to use Twitter in this course to complement assignments and activities, in addition to augmenting the analytical work of the class. Beyond its relevance to the coursework, though, you are encouraged to explore the site as to its possibilities for professional networking for yourselves. Make sure to follow me (@SSI_Prof), other members of the class, in addition to following leaders in your field.

Although we will sometimes use Twitter in the classroom, the bulk of your Twitter activity will take place outside of class. You will be required to tweet a minimum of 3 times per week (at least three tweets each week for weeks 1-10 of this course). There are a few simple guidelines for tweeting: 1) they must be relevant to the class (i.e., a response to a reading, a link to a related article, a map or image, a question, etc.); 2) they must be substantive; and 3) they must be respectful. In addition to reading your tweets on a regular basis, I will be using an online archiving tool to keep track of Twitter activity.

You must use the hashtag #SSCI101 to ensure that your tweets are incorporated into the class discussion. Any tweets that do not contain this hashtag will not be counted because the website will not record their activity.

I will hold a Twitter workshop on the first class meeting to answer questions that you may have on creating and/or using this platform.

Twitter activity for the course will be graded on a pass/fail basis. If you tweet the requisite number of times (a minimum of three tweets per week – or $3 \times 10 = 30$ total tweets), you will receive an A for this assignment. If not, then you will receive a 0 (zero).

5. Course Outline

Week 1, August 25: Introduction to Class

Discuss class goals, projects, technology, and plans for the remainder of the semester.

Distribute Project #1 which asks students to identify an application to advance human well-being that might benefit from spatial analysis.

Week 1 Homework: view Episode 4 (Chapters 1-4) videos on the Geospatial Revolution prepared by Pennsylvania State University and Tweet relevant comments. The video series includes: 1) Monitoring a Changing Climate; 2) Preventing Hunger; 3) Tracking Disease; and 4) Mapping Power to the People. A link to the video series can be found at: <http://geospatialrevolution.psu.edu/episode4/complete>

September 1: University Holiday – no class

Enjoy the Labor Day holiday.

Week 2, September 8: The Spatial Lens

Discuss the three aforementioned videos and the ways in which spatial analysis might be used to advance human well-being.

Join USC SSI ArcGIS.com Organization -- see www.arcgis.com

Discuss and work on Project #1

Week 2 Homework: Activity 1: ArcGIS.com. Complete Project #1.

Week 3, September 15: Geospatial Data (Project #1 due)

Collect and discuss Project #1. Discuss using ArcGIS.com and the USC SSI ArcGIS.com Organization. Discuss Geospatial Data – the nature of geographic data, the creation and visualization of information, representing spatial objects and attributes, GIS-based visualization; the various ways querying is supported in a GIS and the roles played by buffering, point-in-polygon and polygon overlay, spatial interpolation and density estimation, centers and dispersion, histograms, pie charts, and scatterplots; and the roles of optimization, hypothesis testing, and uncertainty in geospatial analysis and decision-making.

Distribute Project #2, which will utilize ArcGIS.com to examine a local topic of interest. The deliverable for Project #2 is to publish and share a map in the USC SSI ArcGIS.com Organization under the SSCI-101 Group. Local topics of investigation may include: LA Metro Light Rail Expansion, Heal the Bay, Historic Broadway District of Downtown LA, among many other research topics.

Week 3 Homework: Activity #2: Geocache USC. Read Esri Story Maps – Lessons Learned.

Week 4, September 22: Geospatial Trends

Ruddell away – no lecture. This week focuses on Geospatial Trends, and your assignment is to complete Activity #3: read the United Nations initiative on Global Geospatial Information Management (UN-GGIM)

Week 4 Homework: Activity #3: UN-GGIM. Complete Project #2.

Week 5, September 29: Spatial Analysis and Image Data (Project #2 due)

Collect and discuss Project #2.

Discuss the Geocache USC activity, which utilized geospatial tools to navigate to cache locations across the University Park campus.

Discuss the United Nations initiative on Global Geospatial Information Management.

Introduce Project #3, which is to build a Story Map. The story maps will be constructed by utilizing a web application template provided in ArcGIS Online. This particular project will involve primary data collection which will then be used in your story map.

Week 5 Homework: view the “Using ArcGIS.com Templates to Create Web Applications” training seminar (see <http://training.ersi.com/> for additional details).

Week 6, October 6: Geospatial Web Applications

Discuss the week 5 homework training seminar and the various ways the online map viewer and application templates in ArcGIS.com can help you to create and share GIS-enabled web maps.

Work on Project #3, which is to create and publish a Story Map.

Week 6 Homework: read Goodchild (2007) Citizens as sensors: the world of volunteered geography. Complete Project #3.

Week 7, October 13: VGI and Crowdsourcing (Project #3 due)

Discuss Project #3 Story Map submissions.

Discuss the opportunities and challenges of building and sustaining crowdsourced geospatial databases and various roles played by citizens, including their roles as sensors and as cartographers mapping our world, in making collective geographic information a reality.

Distribute Project #4 which will require you to utilize geospatial tools and data to construct a project related to GIS Day. GIS Day is an annual event held on the third Wednesday of November, and serves to bring awareness to geographic literacy. Geospatial technologies offer valuable tools to provide unique insight into social and/or ecological processes. Your task is to utilize geospatial technologies on a topic of interest to bring awareness and appreciation to geographic literacy.

Week 7 Homework: view two short videos about the links between social media and spatial data:

“Mapping Social Media” (Fluttr;

http://www.youtube.com/watch?v=9wXrEAPkMYo&feature=player_embedded#at=19); and “What can we Learn from Human Sensors?” (Where CampDC; <http://www.youtube.com/watch?v=52HKtcz-Nfw&feature=related>).

Week 8, October 20: Social Media & Spatial Data

Discuss Geospatial Trends, and how mobile devices can help users to access GIS maps and explore data hosted on ArcGIS Online, discover information in interactive, visually rich maps, and collect and update data using the app on their device.

Discuss what we can learn from human sensors; in particular, their use of social media and the kinds of problems that might ensue if we promote this kind of scientific inquiry by exploring some of the opportunities for exploiting spatial data from geosocial networking to obtain valuable (i.e. intelligent) information about specific events such as the 1984 Los Angeles Summer Olympics, the 1992 Los Angeles riots, and the 1994 Northridge earthquake.

Work on Project #4

Week 8 Homework: review the contents of the floating sheep website (see <http://www.floatingsheep.org/> for additional details) and at least one other website (i.e. something like <http://flowingdata.com/> for example) that contains citizen cartography. Complete Project #4.

Week 9, October 27: Citizen Cartography (Project #4 due)

Collect and discuss Project #4 submissions.

Discuss the various ways citizens have collected or compiled geospatial data and used these data to build a series of visually attractive and informative map products.

Week 9 Homework: Prepare Final Presentation.

Week 10, November 3: Final Presentations

Discuss the various ways citizens have collected or compiled geospatial data and used these data to build a series of visually attractive and informative map products.

6. Important Dates

- 8/25: Fall semester classes begin
- 9/1: Labor Day, university holiday
- 9/12: Last day to register and add classes, change enrollment option to Pass/No Pass or Audit, or to drop a class without a mark of "W" and receive a 100% refund
- 11/13: Final Presentations
- 11/14: Last day to drop a class with a mark of "W"
- 11/19: GIS Day 2014
- 11/26-29: Thanksgiving recess, university holiday
- 12/5: Fall semester classes end
- 12/6-9: Study days

7. Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions can be found at <http://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The review process can be found at <http://www.usc.edu/student-affairs/SJACS/>.

8. Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. More information about academic accommodations based on a disability can be found at http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered as early in the semester as possible. DSP is located in STU 301 and is open from 8:30 a.m. to 5:00 p.m., Monday to Friday. The phone number for DSP is 213-740-0776.

9. Required Materials

All readings and videos will be provided as a URL or posted to the class Blackboard site. Students will also need a GPS-enabled smart phone or tablet (either iOS or Android operating systems) that can connect to ArcGIS Online throughout the semester. Students will also need to check their e-mail and the class Blackboard site regularly. Blackboard posts and e-mails will be used to follow up on in-class discussions, to provide software updates, and to help organize the various class tasks and related activities. You are encouraged to use the class Blackboard site to contribute to the class discussion as well.

10. Software Proficiency

To fully participate in lab activities, students are expected to develop sufficient skills for working in the software and accompanying geospatial data assigned to the course, and it will be important that students keep up with the exercises and skills as the semester advances. While technical skills will be developed and practiced during lab sessions, students are encouraged to continue their learning and practice with the software and outside of the lab sessions as much as possible.

Note that the software proficiency expectations point to the minimum skills required for you to perform each of the assigned project tasks. The lab assistants, however, are equipped to provide help with more sophisticated geospatial software and data resources, and students are free to take advantage of this expertise if they are interested in learning about more advanced features or programs.